

## **REMARKS/ARGUMENTS**

Claims 1-14 and 16-19 remain in this application.

### **1. § 112 Rejections**

Applicants respectfully traverse the rejection of claims 4-11 and 16 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to the Patent Office, “claims 4, 6 and 8 have a group which is very similar to the above accepted form, but there is no indication that the group is “consisting of” the members.” Therefore it is impossible for anyone to tell if applicant’s group is open or closed to additional members – and thus the claim presents uncertainty or ambiguity with respect to the question of scope of the claim.

Applicants respectfully disagree. There is no requirement that a Markush group must include the words “consisting essentially of”. Contrary to the Examiner’s assertions, claim 4 does not refer to a “group which comprises” a number of members. The word “group” in fact does not occur at all in claim 4. Instead, claim 4 requires an atmosphere comprising one or more of Cl<sub>2</sub>, CCl<sub>2</sub>, SOCl<sub>2</sub>, SiCl<sub>4</sub>, GeCl<sub>4</sub>, and POCl<sub>3</sub>. Applicants submit that this language is clear.

With respect to claim 16, the Patent Office indicated that “there is no antecedent basis for “the concentration of any OD present in the consolidated....” Moreover, it is not understood what is meant by this.”

Again, applicants disagree that the meaning of this passage is unclear, and also disagree that there is lack of antecedent basis. Inherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation “the outer surface of said sphere” would not require an antecedent recitation that the sphere has an outer surface. MPEP-2173.05(e). Similarly “the concentration of OD” has inherent antecedent basis. The meaning of the passage is quite simple, normally, the concentration of any OD present in the consolidated perform at all ratios less than about 0.25 RC1 is less than 0.1 ppm.

### **2. § 103 Rejections**

Applicants traverse the rejection of claims 1-14, 16-19 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Gilliland (4,810,276) in view of Burrus (4,515,612).

According to the Examiner:

“Gilliland discloses the steps of providing a consolidated glass rod (feature 54, figure 4) and depositing a layer of silica soot (68) on the outer surface. Examiner notes that this is the conventional OVD process and that there are literally hundreds of other references that could have been used in place of Gilliland. Gilliland does not teach exposing the composite preform to an atmosphere containing deuterium.”

Applicants agree that Gilliland does not teach exposing the composite preform to an atmosphere containing deuterium. Applicants do not agree that there are literally hundreds of references that could have been used in place of Gilliland, and further submit that this comment is without merit and irrelevant as the only rejection by the Examiner involves Gilliland in view of Burrus.

According to the Examiner:

“Burrus teaches exposing preforms to deuterium to lower fiber loss: (col 2, lines 19-26). This treatment can be applied to composite preforms: (col. 4, line 61 – col. 5, line 2.) The treatment can be applied at any time (col. 6, lines 34-37) including after each layer is made (col. 5, lines 55-61). Col. 5, lines 7-16 indicates that treatment can be done prior to consolidation – and that such is “typically quite short”. It would have been obvious to treat with deuterium after each layer is deposited in the Gilliland/OVD method to lower fiber loss to the maximum extent.”

The Examiner appears to mischaracterize several of the passages in Burrus. In an attempt to bring one of these mischaracterizations to the attention of the Examiner, applicants in the previous response explained that col. 6 lines 34-37 did not state that “the treatment can be applied at any time.” On page 5 of the Final Rejection, the Examiner responded that his rejection did not indicate that Burrus “states” this, that instead this was a reasonable conclusion based on what Burrus does “state”. The Examiner then surprisingly indicated that he presumes applicants agree that such is a reasonable summary of Burrus (applicants clearly do not agree), in spite of the fact that this in response to applicants’ explanation that they do not agree that Burrus states what the Examiner had indicated. Applicants would greatly appreciate the Examiner not presuming that applicants agree with any statement by the Examiner,

unless the applicants expressly indicate that they agree. For the record, applicants do not agree with any of the Examiner's statements unless expressly indicated.

Applicants assume that the additional characterizations by the Examiner of what Burrus teaches are, like col. 6 lines 34-37, conclusions of the Examiner based on what Burrus in fact state. Applicants assume this because, like the passage at col. 6, lines 34-37, the conclusions do not seem to agree with the actual words found in each of the passages referred to. The Examiner provides no rationale or discussion as to how his conclusions are reached for each passage. Consequently, applicants have no ability to respond to the Examiner's "conclusions", other than to point out how these conclusions do not appear to be supported by the passages referred to. Applicants therefore disagree with what are apparently the Examiners conclusions as to what the following passages in Burrus state:

- (1) Applicants disagree that column 4, line 61 – column 5, line 2 indicate that any treatment can be applied to composite preforms. Column 4, line 61 – column 5, line 2 provides:

"Preforms thus can consist either completely of "deposited" glass (i.e., glass formed during perform manufacture by a glass-forming chemical reaction such as the above described gas-phase reaction), of deposited glass in addition to "undeposited" glass (i.e., glass derived from a glass body not formed during perform manufacture by a glass-forming reaction, such as fused quartz from a pre-existing fused quartz substrate tube), or even completely of undeposited glass."

Thus, this passage does not mention treatments at all, of any kind. This passage merely indicates that performs may consist of either completely deposited glass or deposited glass and undeposited glass.

- (2) Applicants disagree that column 6, lines 34-37 indicate that the treatment can be applied at any time. Column 6, lines 34-37 provide that:

"Deuteration of the silica can of course take place at any appropriate stage of the article manufacturing process, for instance, after forming of the tube or rod." (emphasis added) Thus, this passage indicates that deuteration must occur at an "appropriate stage". (emphasis added)

Rather than indicating that deuteration can be applied at any time, this passage indicates that deuteration can occur at appropriate stages. While not giving guidance to indicate what stages are appropriate, two examples of appropriate stages are provided, namely, (1) after forming a tube and (2) after forming a rod. This passage thus describes applying the deuterium to consolidated rods and tubes. It does not suggest applicants' claimed process.

- (3) Applicants disagree that Column 5, lines 55-61 suggests that a treatment can be applied after each OVD layer is made. Column 5, lines 55-61 indicate that:

“Since in the MCVD process consolidation of any individually deposited layer generally takes place before deposition of the succeeding layer it is, of course, possible to carry out the D/H exchange layer by layer.” (emphasis added)

Thus, this passage suggests that only in processes such as MCVD, where consolidation of any individually deposited layer generally takes place before deposition of the succeeding layer, can layer by layer D/H exchange occur. This passage thus teaches away from the combination proposed by the Examiner, namely, “it would have been obvious to treat with deuterium after each later is deposited in the Gilliland/OVD method to lower fiber loss to the maximum extent”. This passage in fact indicates that only for MCVD methods where consolidation of any individually deposited layer generally takes place before deposition of the succeeding layer, can layer by layer D/H exchange occur.

- (4) Applicants disagree with the Examiner's statement that “Column 5, lines 7-16 indicates that treatment can be done prior to consolidation.” Column 5, lines 7-16 provides that:

“If at some point of the preform manufacturing process the complete unconsolidated deposit is available for processing, then our invention can be practiced by exposing the unconsolidated deposit to an atmosphere containing deuterium for a sufficient length of time to prevent diffusion of the deuterium throughout the volumes of interest. Since in this case these volumes are essentially those of the individual

deposited particles, this time will be typically quite short at elevated temperatures.”

This passage is referring to the passage above which which again refers to the VAD and MCVD processes, neither of which are relevant to the currently pending claim 1 which involves OVD soot deposition, as neither of these processes would result in unconsolidated glass deposited onto a consolidated glass precursor body. Furthermore, this passage is referring to treatment of the unconsolidated deposit, not penetration of the unconsolidated deposit so that the D<sub>2</sub> or D<sub>2</sub>O penetrates the consolidated glass portion, as required by claim 1.

The fact that the Examiner in several instances either mischaracterizes or only refers to selected portions of Burrus without referring to the additional portions of Burrus which would not support the Examiner’s conclusion, illustrates that this rejection is a hindsight rejection, and that there is no mention or suggestion of applicants’ claimed invention in either of the references cited, either alone or in combination.

According to the Examiner, it would have been obvious to treat with deuterium after each layer is deposited in the Gilliland/OVD method to lower fiber loss to the maximum extent.

Applicants respectfully disagree. There is no mention in any of the references cited the Examiner that treatment of each layer would reduce fiber loss to the maximum extent, and in fact, one of the passages referred to by the Examiner in support of his modification actually teaches that individual layers should only be treated where consolidation of any individually deposited layer generally takes place before deposition of the succeeding layer, can layer by layer D/H exchange occur, as in the MCVD process.

Furthermore, even if the references were combined in the manner suggested, doing so would not result in applicants’ claimed invention which requires penetrating the consolidated glass portion without entirely pervading the consolidated glass portion. This step in claim 1 (penetrating a consolidated glass portion without entirely pervading the consolidated glass portion) is not mentioned or suggested by any of the references cited by the Patent Office.

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According to the Examiner, "As to the limitation that time and temperature being sufficient to cause the deuterium compound to penetrate without pervading. It is quite clear the compound penetrates (col 1, lines 66-68 and col. 2, line 65 to col. 3, line 3 and elsewhere in Burrus). From col. 3, lines 19-21 and elsewhere in Burrus; the compound does not pervade – it is reacted with OH." Applicants agree that deuterium penetrates, however claim 1 is not claiming mere penetration using deuterium. Instead, claim 1 requires exposing a composite perform comprised of both deposited silica and consolidated glass for a time and temperature sufficient to cause the deuterium compound to penetrate the consolidated glass portion without pervading the entire glass portion.

Based upon the above amendments, remarks, and papers of records, applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Applicant believes that no extension of time is necessary to make this Reply timely. Should applicant be in error, applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Robert L. Carlson at 607-974-3502.

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Respectfully submitted,



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